



# Volunteer Lake Assessment Program Individual Lake Reports

## PERKINS POND, SUNAPEE, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	704	Max. Depth (m):	3	Flushing Rate (yr <sup>-1</sup> ):	1.3	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	157	Mean Depth (m):	1.4	P Retention Coef:	0.83	1986	OLIGOTROPHIC	
Shore Length (m):	3,900	Volume (m <sup>3</sup> ):	877,000	Elevation (ft):	1082	2003	MESOTROPHIC	

### TROPHIC CLASSIFICATION

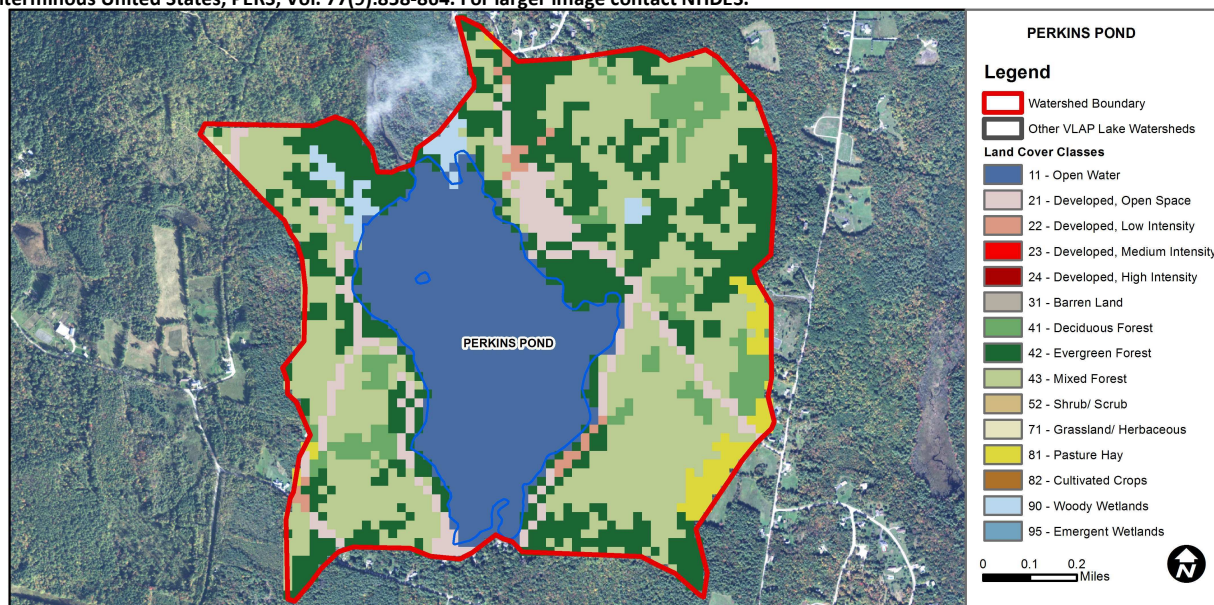
### KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Cautionary	One exceedance of single sample criteria but not enough data to calculate geometric mean. More data needed.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	24.8	Barren Land	0	Grassland/Herbaceous	0.1
Developed-Open Space	6.47	Deciduous Forest	5.65	Pasture Hay	2.53
Developed-Low Intensity	0.92	Evergreen Forest	24.64	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	33.43	Woody Wetlands	1.71
Developed-High Intensity	0	Shrub-Scrub	0	Emergent Wetlands	0



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

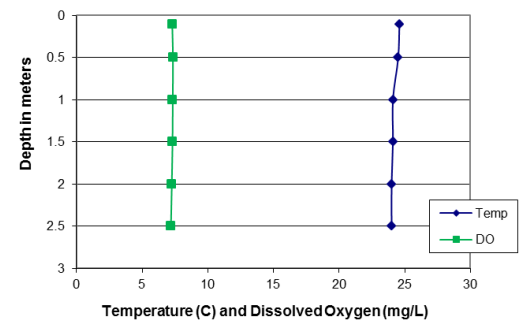
## PERKINS POND, SUNAPEE, NH

### 2013 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- CHLOROPHYLL-A:** Chlorophyll levels were elevated throughout the summer and indicative of an algal bloom in August. Significant early summer storm events likely contributed excess nutrients to promote algal growth. Historical trend analysis indicates relatively stable chlorophyll with moderate variability between years.
- CONDUCTIVITY/CHLORIDE:** Deep spot and tributary conductivity and chloride are slightly greater than the state median. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began.
- TOTAL PHOSPHORUS:** Epilimnetic and Outlet phosphorus were slightly greater than the state median in June and August. Historical trend analysis indicates relatively stable epilimnetic phosphorus.
- TRANSPARENCY:** Transparency remained stable in June and July but was lower in August likely due to the increased algal growth. Historical trend analysis indicates relatively stable transparency with moderate variability between years.
- TURBIDITY:** Epilimnetic turbidity was slightly elevated throughout the summer likely due to increased algal growth. Outlet turbidity was elevated in June likely due to stormwater runoff from significant rain events prior to sampling.
- pH:** Epilimnetic pH was lower than desirable range 6.5 – 8.0 units in June, however increased in July and August potentially due to the increased algal growth and photosynthetic by-products. Historical trend analysis indicates relatively stable epilimnetic pH with moderate variability between years.
- DISSOLVED OXYGEN:** Dissolved oxygen levels were high throughout the water column and sufficient to support aquatic life.
- RECOMMENDED ACTIONS:** Stormwater runoff may have contributed to the increased turbidity in the Outlet in June. Identify potential areas of erosion around the Outlet and implement best management practices to reduce erosion. Algal growth was elevated throughout the summer. Stormwater runoff from significant storm events in June and July likely contributed excess phosphorus to stimulate algal growth. Educate lake and watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "Homeowner's Guide to Stormwater Management" tool. Conductivity has significantly increased in the pond potentially due to road salting. Work with local road agents to identify possible ways to reduce the impact of road salting, and encourage them to obtain a Voluntary NH Salt Applicator license through the UNH Technology Transfer Center's (T2) Green SnowPro Certification Program.

#### Dissolved Oxygen Temperature Profile, July 2013



**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** < 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** 6.5-8.0 (unless naturally occurring)

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

Station Name	Table 1. 2013 Average Water Quality Data for PERKINS POND								
	Alk.	Chlor-a	Chloride	Cond.	Total P	Trans.		Turb.	pH
	mg/l	ug/l	mg/l	uS/cm	ug/l	m		ntu	
						NVS	VS		
Epilimnion	7.70	9.42	13	64.38	12	2.25	2.30	1.77	6.71
Inlet				52.97	7			0.39	6.36
Outlet				67.33	13			2.05	6.39

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
pH	Stable	Trend not significant; data moderately variable.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
Conductivity	Degrading	Data significantly increasing.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data show low variability.

